CLAIMS LISTING

WHAT IS CLAIMED IS:

1. (Currently Amended) A method of identifying those animals having greater milk productivity from a group of ~~livestock~~ bovine animals of the ~~same~~ bovine species comprising:

[[c]] (a) selecting the livestock, wherein the selecting comprises:

(i) obtaining a nucleic acid molecule sample containing an *ob* gene polymorphism which is a C to T transition that results in Arg25Cys from livestock,

(ii) amplifying a region of the *ob* gene polymorphism with the oligonucleotide pair of SEQ ID NO:4 and SEQ ID NO:5 to encompass and include the polymorphic position to form nucleic acid amplification products,

(iii) contacting the amplified *ob* gene polymorphism sequences from step (ii), with hybridization probes consisting essentially of the oligonucleotide pair of SEQ ID NO:6 and SEQ ID NO:7, labeled with a detectable moiety under suitable conditions permitting hybridization of the labeled oligonucleotide probe to amplified *ob* gene polymorphism sequences to form duplex structures,

(iv) detecting the presence of amplified *ob* gene polymorphism sequences by detecting the detectable moiety of the labeled oligonucleotide probe hybridized to the amplified *ob* gene polymorphism sequences, and

(v) selecting the type of the livestock animal based on the detection of the *ob* gene polymorphism; and

(b) identifying those animals having a greater milk productivity based on the presence of a particular *ob* gene polymorphism at a specific polymorphic position in the *ob* gene.

2. (Currently Amended) The method of claim 1 wherein the selecting comprises determining whether the ~~livestock~~ bovine animal is a TT animal homozygous with respect to the T-allele of the *ob* gene, a CC animal homozygous with respect to the C-allele of the *ob* gene, or a CT animal heterozygous with respect to the T-allele and the C-allele of the *ob* gene.

3. to 6. (Canceled)

7. (Currently Amended) The method of ~~claim 6~~ claim 1wherein the bovine is bovine dairy cattle.

8. (Currently Amended) A method of increasing milk production in a selected group of ~~livestock~~ bovine animals of the same species comprising:

(a) determining a genetic predisposition of each animal to produce milk by determining their *ob* genotype; and

(b) selecting animals that possess the T-containing allele ~~of the ob gene~~ which results from a change from Arginine to Cysteine for inclusion in the group.

9. (Currently Amended) The method of claim 8 wherein increasing milk production in a selected group of ~~livestock~~ bovine animals of the same species occurs during the first one hundred days of lactation.

10. (Original) The method of claim 9 wherein determining comprises determining whether the animal is a TT animal homozygous with respect to the T-allele of the *ob* gene, a CC animal homozygous with respect to the C-allele of the *ob* gene, or a CT animal heterozygous with respect to the T-allele and the C-allele of the *ob* gene.

11. (Canceled).

12. (Currently Amended) A method of identifying those bovine animals having increased milk productivity compared to a general population of animals of the same species by determining their *ob* genotype wherein animals that possess the T-containing

allele of the *ob* gene have increased milk productivity compared to animals that possess only the C-containing allele of the *ob* gene.

13. (Original) A method of claim 12 wherein TT animals homozygous with respect to the T-allele of the *ob* gene have a greater milk productivity than CT animals heterozygous with respect to the T-allele.

14. (Currently Amended) A method of breeding ~~livestock~~ bovine animals to increase milk production in the offspring comprising selecting breeding pairs of ~~livestock~~ bovine animals of the same species to increase occurrence of the *ob* T-allele in the offspring and breeding same.

15. (Original) The method of claim 14 wherein the milk production is increased in the first one hundred days of lactation in the offspring.

16. (Currently Amended) A method of increasing milk production in a selected group of ~~livestock~~ bovine animals of the same species comprising:

(a) determining a genetic predisposition of each animal to produce milk by determining their *ob* genotype;

[[(d)]] (b) selecting animals that possess the T-containing allele ~~of the *ob* gene~~ which results from a change from Arginine to Cysteine for inclusion in the group; and

[[(e)]] (c) increasing the amount of feed for [[in]] the selected group.

17. (Currently Amended) The method of claim 16 wherein increasing milk production in a selected group of ~~livestock~~ bovine animals of the same species occurs during the first one hundred days of lactation.

18. (Original) The method of claim 17 wherein determining comprises determining whether the animal is a TT animal homozygous with respect to the T-allele of the *ob* gene, a CC animal homozygous with respect to the C-allele of the *ob* gene, or a CT animal heterozygous with respect to the T-allele and the C-allele of the *ob* gene.

19. to 21. Canceled.

22. The method of ~~claim 21~~ claim 16 wherein the bovine is a bovine dairy cattle.